

## Operator PROD\_MATR\_CHAM

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### 1 Goal

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To carry out the product of a matrix by a vector.

The matrix is a structure of data of the type `matr_asse` : it is with actual values or complex, symmetrical or not symmetrical. The vector is a structure of data of the type `cham_no`. It is with actual values or complex. One imposes who matrix and vector are both to actual values or both with complex values (if not to use the orders before `COMB_MATR_ASSE` [U4.72.01] or `CREA_CHAMP` [U4.72.04]) and that they divide same classification (see order `NUME_DDL` [U4.61.11]).

Product a concept of the type `cham_no`.

## 2 Syntax

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```
uass [cham_no] = PROD_MATR_CHAM (  
    ♦ MATR_ASSE = m, / [matr_asse_DEPL_R]  
    / [matr_asse_TEMP_R]  
    / [matr_asse_DEPL_C]  
    / [matr_asse_PRES_C]  
    ♦ CHAM_NO = U, [cham_no]  
    ♦ TITLE = titr, [l_Kn]  
    )
```

Size associated with the cham\_no result with the order (uass) is the same one as that of U.

## 3 Operands

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### 3.1 Keyword **MATR\_ASSE**

- ◆ `MATR_ASSE = m`  
Name of the matrix (concept `matr_asse_*`) to multiply.

### 3.2 Keyword **CHAM\_NO**

- ◆ `CHAM_NO = U`  
Name of the vector (concept `cham_no`) to multiply.

### 3.3 Keyword **TITLE**

- ◇ `TITLE = titr`  
Title which one wants to give to the result

## 4 Checks

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- Checking that the matrix and the vector to be multiplied are both to actual values or both with complex values.
- Checking of coherence: operands of the type `matr_asse_*` and of type `cham_no` must share same classification.

## 5 Example of use

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Product stamps vector:

```
u_mv_1 = PROD_MATR_CHAM ( MATR_ASSE = mat_1,  
                           CHAM_NO = u_1,  
                           )
```

For example, one can use this order to create a vector second member resulting from the product of the matrix of mass and a vector acceleration obtained by the order `DYNA_LINE_TRAN`. This vector second member can be used as loading for a static calculation.